

International Lake Superior Board of Control Semi-Annual Progress Report to the International Joint Commission

Covering the Period March 19 to September 17, 2002



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International Lake Superior Board of Control

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September 17, 2001

International Joint Commission
Washington, D.C.
Ottawa, Ontario

Commissioners:

This semi-annual report covers the Board's activities from March 19 to September 17, 2002.

1. Highlights

During the past six months, the Lake Superior and Lakes Michigan-Huron water levels were below average, by about 15 cm (6 inches) and 30 cm (12 inches), respectively. Compared to one year ago, Lake Superior's 2002 summer levels were similar, while those of Lakes Michigan-Huron were about 30 cm (12 inches) higher.

The Lake Superior outflows were as specified by Regulation Plan 1977-A during the past six months, except for a minor over-discharge in August and September to allow for the replacement of the gate bottom seals at the Compensating Works.

The power entities conducted peaking and ponding operations during the months of May through September. At the direction of the Board, ponding operations were not carried out during the month of April due to low Lake Superior outflow and below-average water level conditions on the St. Marys River below Sault Ste. Marie.

On June 25, the Board held a public meeting in Paradise, Michigan, which was well attended. Although the water levels on Lake Superior have been below average this summer, the area residents were generally content with the conditions, although they preferred that the levels not decline any further.

On August 13 and 14, the U.S. Army Corps of Engineers and Environment Canada supported the Board in conducting flow measurements at the Edison Sault Electric Company hydropower plant.

The automation of the U.S. Government hydropower plant continues and it is expected to be complete by the end of September this year.

2. Monitoring of Hydrologic Conditions

The Board, through its staff, continuously monitored the water levels of Lakes Superior and Michigan-Huron, and the water levels and flows in the St. Marys River. The Regulation Representatives' monthly reports to the Board provided a hydrologic assessment, as well as recommendations on the regulation of outflows from Lake Superior. These reports also indicated the amount of water available for hydropower purposes, after the requirements for domestic use, navigation, and the fishery (St. Marys Rapids) are met.

Tables 1 and 2 list the recent monthly water levels, net basin supplies, and outflows for Lakes Superior and Michigan-Huron, respectively. Figure 1 compares the monthly water levels for this period to long-term averages and extremes. Figure 2 shows the monthly precipitation over the Lake Superior and Lakes Michigan-Huron basins. Figure 3 shows the monthly net basin supplies for the basins.

On the Lake Superior basin, precipitation in January this year was about one-half of the average amount, and then it was followed by five months of above-average precipitation. July was on the dry side while August was near average. The net basin water supplies, which are the net effect of precipitation, evaporation and runoff to the lake, were close to average except in April when they were about 40 percent higher than average. Lake Superior's levels were below the chart datum elevation of 183.2 m (601.1 feet), IGLD (1985), in February, March and April this year, and have since remained above chart datum. Lake levels of the past six months were generally 15 cm (6 inches) below average, and summer levels similar to one year ago. On September 17, its level was at elevation 183.41 m (601.74 feet), which was 15 cm (6 inches) below average and 4 cm (1.6 inches) higher than the level one year ago.

The precipitation pattern on the Lakes Michigan-Huron basin was somewhat similar to that for the Lake Superior basin, being less-than-average in January and on the wet side between February and May and in August. July had below average precipitation. The Lakes Michigan-Huron net total water supplies, which include the inflows from Lake Superior, have been very close to average so far this year. While the spring weather was a bit cool and damp, the summer temperatures were higher than normal contributing to increased evaporation. Lakes Michigan-Huron levels have been above its chart datum elevation of 176.0 m (577.4 feet) throughout the reporting period. The monthly mean water levels of the past six months were 29 to 37 cm (11 to 15 inches) below average, with summer levels generally 30 cm (12 inches) higher than one year ago. On September 17, Lakes Michigan-Huron were at elevation 176.23 m (578.18 m feet), which was 32 cm (13 inches) below average, and was 24 cm (9 inches) higher than one year ago.

3. Regulation of the Outflow from Lake Superior

The outflows of Lake Superior during the reporting period were as specified by the regulation

plan except in August and September during the replacement of the bottom seals of the eight U.S. gates of the Compensating Works. A one-half gate open setting was designated for August and September in accordance with outflow regulation requirements, but it was necessary to raise each of the eight gates fully above the water line one-at-a-time to allow the repair. This caused an increase in the flow at the Compensating Works and in the main rapids. This small over-discharge, about $60 \text{ m}^3/\text{s}$ (2,100 cfs) since August 20, had virtually no impacts on the water levels of the lower St. Marys River, or the water levels of Lakes Superior and Michigan-Huron. This deviation from the regulation plan outflow was approved by the Commission by letter dated July 17, 2002. Due to the late start, the gate seal replacement is expected to extend into mid-October this year, and is expected to cause a very small over-discharge for that month.

Gate 1, which supplies water to the Fishery Remedial Works, remained at its normal flow setting of $15 \text{ m}^3/\text{s}$ (530 cfs) throughout the past six months.

4. Governing Conditions During the Reporting Period

The monthly mean levels of Lake Superior during the reporting period were within the limits of 182.76 and 183.86 m (599.6 and 603.2 feet) specified in the Commission's Orders of Approval.

During the reporting period, the daily mean water levels in the lower St. Marys River at the U.S. Slip Gauge downstream of the U.S. Locks, varied between elevations 176.23 m (578.18 feet) and 176.74 m (579.86 ft). The requirement for maintaining the river level at that location below 177.94 m (583.8 feet) was satisfied.

5. Repairs, Inspection and Flow Calibration at the Compensating Works

As a result of leakage occurring through the bottom gate seals at the eight U.S. gates in the Compensating Works, the bottom gate seals at all eight gates are being replaced. This work started on August 20 this year and is expected to be complete some time in mid-October. To minimize the flow deviation from the regulation plan and large flow changes in the rapids, seal replacement is taking place one gate at a time.

Upon completion of the gate seal replacement, the Corps of Engineers and Environment Canada will resume their program to conduct flow measurements to update the flow rating for the structure. The next flow measurement program is planned for the summer of 2003.

6. Repairs, Maintenance and Flow Determination at the Hydropower Facilities

a. U.S Government Hydropower Plant

The automation of the U.S. Government hydropower plant continues and it is expected to be completed by the end of September this year. This automation required, starting on June 10 until late September, shutting down one or two units at a time so as to minimize the impact on water diversion. The work includes replacing the existing analog meters with digital instrumentation

to continuously record, and to give readings of instantaneous power production and instantaneous plant operating head. It also includes replacing the existing rotating exciters with solid-state exciters. When the plant automation is complete and a modern system control and data acquisition system is in place, expected by October 31 this year, new rating tables will be developed correlating actual water flow with turbine gate opening, the power generated and plant head.

b. Great Lakes Power Limited

On July 20, Lake Superior Power, which owns the 115 KV underwater power cables in the intake canal of the Great Lakes Power Limited plant, carried out an underwater inspection by divers of the cables. To facilitate this underwater inspection, Great Lakes Power Company shut down all three units for about eight hours on that day, resulting in about 47 percent reduction of the flow of the St. Marys River at Sault Ste. Marie. The water level at the U.S. Slip gauge just downstream of the locks declined sharply, by about 20 cm (8 inches), and recovered quickly following resumption of full water diversion at the plant. The levels at the U.S. Slip gauge remained above chart datum during the flow reduction, and there were no reports of ship delays as a result of the water level changes in the river.

c. Edison Sault Electric Company

On August 13 and 14, the U.S. Army Corps of Engineers and Environment Canada conducted flow measurements in the power canal of the Edison Sault Electric Company plant. The purpose was to verify the accuracy of a new flow calculation method implemented by the power entity during the summer of 2001. At the invitation of the Board, a representative from the United States Geological Survey observed the flow measurement procedure. Some data points were collected mainly in the high flow range because, at the time, the Edison plant was operating near capacity when taking in the unused water transferred from the U.S. Government Plant. Follow-up measurements are planned for the summer of 2003 to collect a wider range of data points.

7. Water Usage in the St. Marys River

Table 3 (Table 4 in U.S. Customary units) lists the distribution of outflows from Lake Superior for January-August 2002. Water uses are divided into four categories: domestic, navigation, fishery, and hydropower. According to the 1979 Supplementary Order, after the first three water requirements are satisfied, the remaining outflow from Lake Superior is shared equally between the U.S. and Canada for hydropower purposes. Any remaining flow allotment, beyond the flow capacity of the hydropower plants, is normally discharged through the Compensating Works and the St. Marys Rapids.

As shown in the tables, the amount of water used for domestic purposes was fairly constant and averaged about 4 m³/s (140 cfs) from January to August. The flow through the locks depended on traffic volume and varied from 2 to 18 m³/s (70 to 640 cfs).

In accordance with the Commission's Orders to fulfill the fishery needs in the main rapids, a minimum gate setting of one-half gate open, or its equivalent, is required at all times at the Compensating Works. In addition, a flow of at least 15 m³/s (530 cfs) in the Fishery Remedial Works (through Gate 1) must be maintained. A setting equivalent to one-half gate open for the main rapids was maintained during the reporting period, except during the repairs to the gate seals in August and September when one gate at a time was fully raised above the water line. The one-half gate equivalent setting is accomplished by having four gates partially open to supply the same quantity of water as one gate half-open. This setting spreads the water more evenly across the main rapids, and is less hazardous for upstream boaters who might accidentally drift into the structure. Gate No. 1 remained set at 15 m³/s (530 cfs), meeting the requirements of the Orders.

8. Peaking and Ponding Operations at Hydropower Plants

Flow variations at the hydropower plants at Sault Ste. Marie cause the water levels to fluctuate in the St. Marys River downstream of the plants. With the water levels and Lake Superior outflows below average, the fluctuations have become a subject of concern for the commercial navigation users. At the request of the Commission, the Board reviewed peaking and ponding operations at the hydropower plants, and submitted a report to the Commission in February this year. The report recommended that peaking and ponding operations be authorized for one more year under guidelines proposed by the Board. One of the guidelines specifies that no ponding operations be allowed if they are expected to cause sustained weekend levels at the U.S. Slip Gauge to be below chart datum elevation. On March 15, 2002, the IJC approved peaking and ponding until March 20, 2003, subject to the prior approval of the Board at the beginning of each month.

During the reporting period, the power entities undertook peaking and ponding operations under the supervision of the Board. Ponding operations were suspended for the month of April 2002, due to the low levels at U.S. Slip caused by a combination of low flow in the St. Marys River and the low water level conditions on Lake Huron.

As requested by the Commission by letter dated March 15, 2002, the Board will submit a written report by December 15, 2002.

To provide timely information to the users, the Corps of Engineers continues to distribute monthly notices on expected Lake Superior outflows, and schedules of flow variations at the hydropower plants. The notices also contain information for mariners on who to contact to obtain additional information related to water levels and flows.

9. Long Lac and Ogoki Diversions

Ontario Power Generation continued to provide the Board with information on the operations of the Long Lac and Ogoki Diversions. The Ogoki Diversion into Lake Nipigon (which flows into Lake Superior) averaged 173 m³/s (6,100 cfs) from March through August 2002. The Long Lac Diversion averaged 50.2 m³/s (1,770 cfs) for the same period. Combined, these diversions were

about 134 percent of average for the period 1944-2001.

In May and June, water was spilled northward to the Kenogami River from Long Lake. Similarly, water was spilled northward into the Ogoki River during June, July and August. In both cases, the spillage was the result of high inflows to these reservoirs.

At the Long Lac diversion project, beginning in May 1999 a continuous flow of at least 2 m³/s (70 cfs) is to be maintained in the summer period (mid-May through about Labour Day) from the north outlet of Long Lake. This agreement between Ontario Power Generation and the local First Nations provides “environmental enhancement” water to the Kenogami River, and reduces the amount diverted to Lake Superior.

10. Annual Meeting with the Public and Public Information

The Board held its annual meeting with the public on June 25 in Paradise, Michigan. About 25 members of the public attended. The attendees were generally content with the current below-average water level conditions on Lake Superior, but preferred that the levels not decline any further. There were requests that the Commission and the Board provide increased public participation and timely information about the proposed study to review Lake Superior outflow regulation. There were also concerns expressed on shoreline erosion and property damage during periods of high water levels.

The Board continues to issue, at the beginning of each month, news releases informing the public about Lake Superior regulation and water level conditions. Announcements were made to caution visitors and anglers about water level and flow changes in the St. Marys Rapids during the repairs at the Compensating Works, and cable inspection at the Great Lakes Power Limited plant.

In support of the Board and the Commission, the Detroit District Corps of Engineers maintains a Board web site. It includes information on the Board and its activities, news releases and updates on Great Lakes basin conditions.

11. U.S. Navigation Improvements and Studies

a. Vidal Shoals Dredging and Little Rapids Dredging

The previously reported dredging of the Vidal Shoals in the upper St. Marys River began in June, 2001 following approval from the U.S. State Department, which had consulted with Canada’s Department of Foreign Affairs and International Trade. This dredging project consists of deepening and modifying widths in existing channels in the Upper St. Marys River between Pointe Louise Turn and the South Canal to the navigation locks, upstream of Sault Ste. Marie, Michigan and Ontario. Dredging in the Point aux Pins area (about 8 kilometres upstream of the locks) is complete. The West Approach area dredging should be complete in October this year. Dredging continues in the Vidal Shoals, between Point aux Pins and the West Approach, and is

expected to be completed by mid-October this year pending resolution of a dispute between the contractor and the Corps of Engineers over removal of some high areas.

Below Sault Ste. Marie, in accordance with Section 343 of the Water Resources Development Act of 2000, the Corps of Engineers is considering dredging 36,000 to 60,000 cubic metres (45,000 to 75,000 cubic yards) of material in the navigation channel extending from the south approach of the Soo Locks to the Rock Cut on the west side of Neebish Island. The required depth will be 8.5 m (28.0 feet) below Low Water Datum with an allowance for 0.3 metre (1 foot) of over-depth dredging to allow for the inaccuracies inherent to the dredging process. This work will be entirely in U.S. waters. Hydraulic analysis of the impacts of this dredging on water levels is being carried out by the Corps and Environment Canada. The impact on trans-boundary levels, and flow distribution around Sugar Island, is also under study. It is expected that the Corps of Engineers will soon sign a "Finding of No Significant Impacts" completing its environmental assessment process. Contract award is anticipated to proceed pending the final results of the hydraulic study, and consultation between the two Governments. The Board has requested that the Corps keep it informed of the project scope, status, and potential impacts.

b. Great Lakes System Navigation Review

In 1999, the U.S. Congress authorized the Corps of Engineers to review the feasibility of improving commercial navigation on the Great Lakes – St. Lawrence Seaway system, including locks, dams, harbours, ports, channels and other related features. The first phase of the review, a reconnaissance study, was completed this summer. The results from the reconnaissance review indicate that both reliability and adequacy of the existing system present problems and opportunities. On June 27, the Detroit District office submitted its report to Headquarters for review and approval. Possible improvements for navigation include deepening Great Lakes connecting channels, the St. Lawrence Seaway and specific ports, and reconstruction of locks on the system.

The Board will continue to update the Commission on the progress of this review.

c. Lock Replacement at Sault Ste. Marie, Michigan

The construction of a new lock at Sault Ste. Marie, Michigan to provide for more efficient movement of waterborne commerce was initially authorized by the U.S. Congress in 1986, with continuation of authorization in 1990 and 1996. The Corps of Engineers is currently reviewing the economic justification of replacing two technologically obsolete locks (Davis and Sabin Locks) with one modern lock. Once completed, a Limited Re-evaluation Report is expected to be submitted this fall to USACE Headquarters for review and approval. A Project Cooperation Agreement with the Great Lakes Commission is still being negotiated. The dewatering cofferdam design is complete. Lock design is expected to be initiated in FY 2003 pending availability of funds. Completion is expected to take six years from start of construction.

The Board will continue to update the Commission on the progress of this project.

12. Sea Lamprey Control

By letter dated June 17, 2002, the Great Lakes Fishery Commission (GLFC) requested the Board's assistance in carrying out a sea lamprey trapping experiment immediately below the ice spillway at the Great Lakes Power Limited hydropower plant. The experiment was to take place for about one-half of the time during the months of July and August. As the proposed opening of the ice spillway would incur an additional flow in the power canal, the Board by letter dated June 21 requested the Commission for approval to deviate from the regulation plan. The experiment did not take place following Great Lakes Power Company's decision not to proceed due to operational considerations.

To explore other alternatives where the Board could be of help, the Board invited the biologists and fishery experts from the Great Lakes Fishery Commission and the Sea Lamprey Control Centre in Canada to its September 17 meeting. Conflicting obligations made their attending the meeting impossible. The GLFC representative by letter dated September 16, 2002 informed the Board that there would be no further request for flow adjustment this year, and that GLFC looks forward to meet with the Board at the March 2003 meeting to explore options for their 2003 field season.

13. Board Membership and Meetings

There was no change in the Board membership during the reporting period. LTC Thomas H. Magness replaced LTC Richard J. Polo, Jr as the U.S. Regulation Representative on July 12. Mr. Barry Guzzo, General Works Manager at Parks Canada, Sault Ste. Marie, became the Board's on-site representative on July 29, replacing Mr. Robert Sheldon who took on a new position.

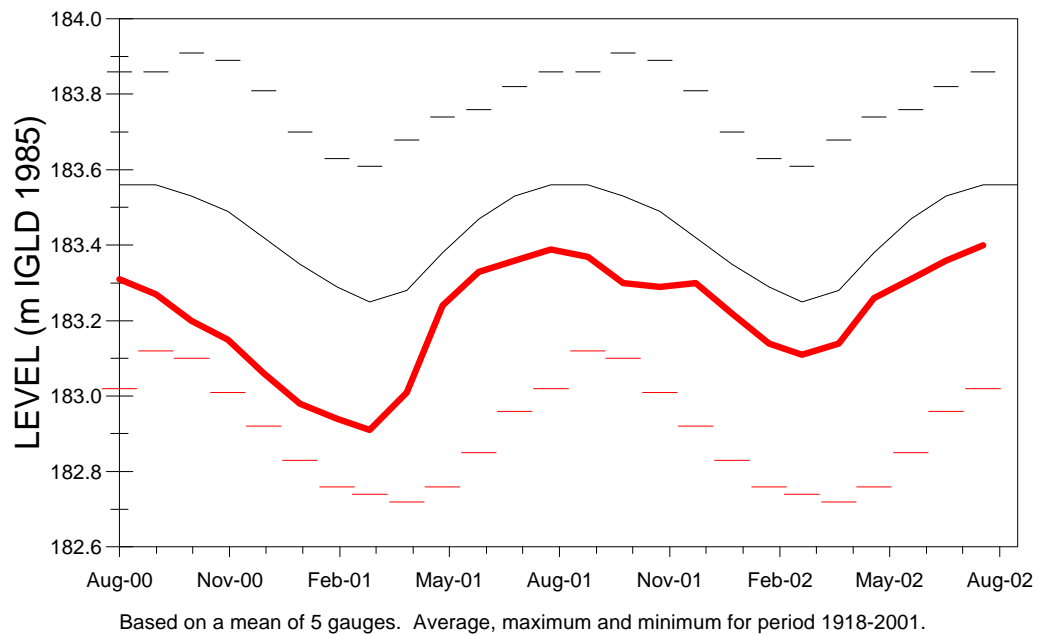
The Board held a meeting on September 17 with Canadian member and the U.S. alternate member, Colonel Mark Roncoli in attendance.

Respectfully submitted,

BG Steven R. Hawkins
Member for United States

Doug Cuthbert
Member for Canada

LAKE SUPERIOR MONTHLY WATER LEVELS



LAKES MICHIGAN-HURON MONTHLY LEVELS

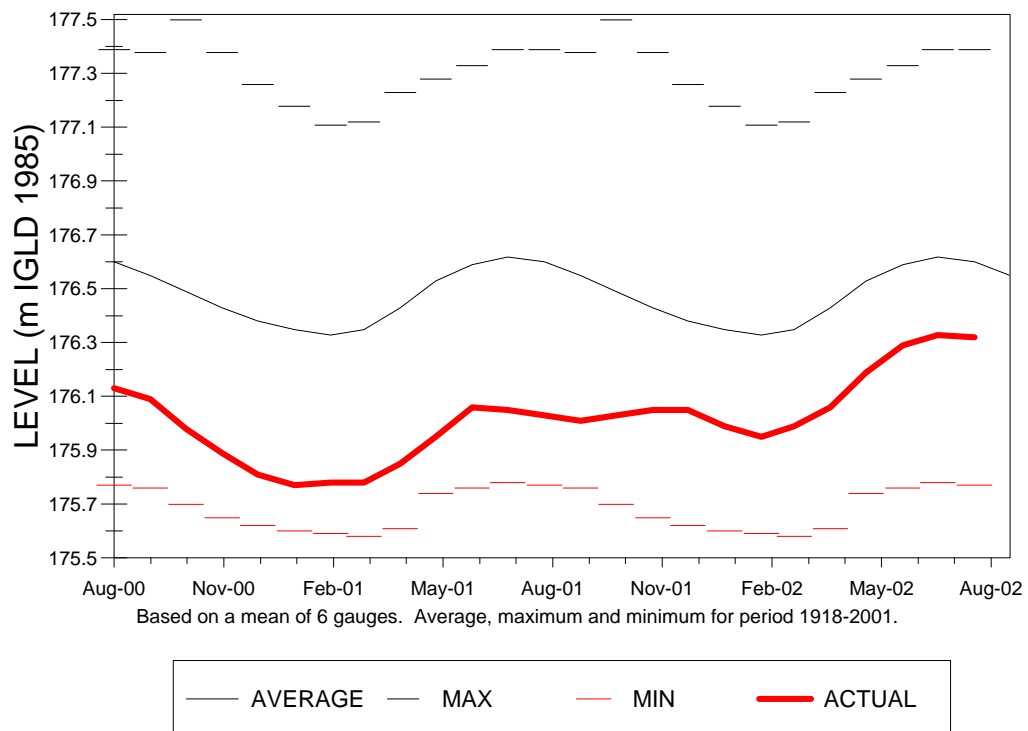
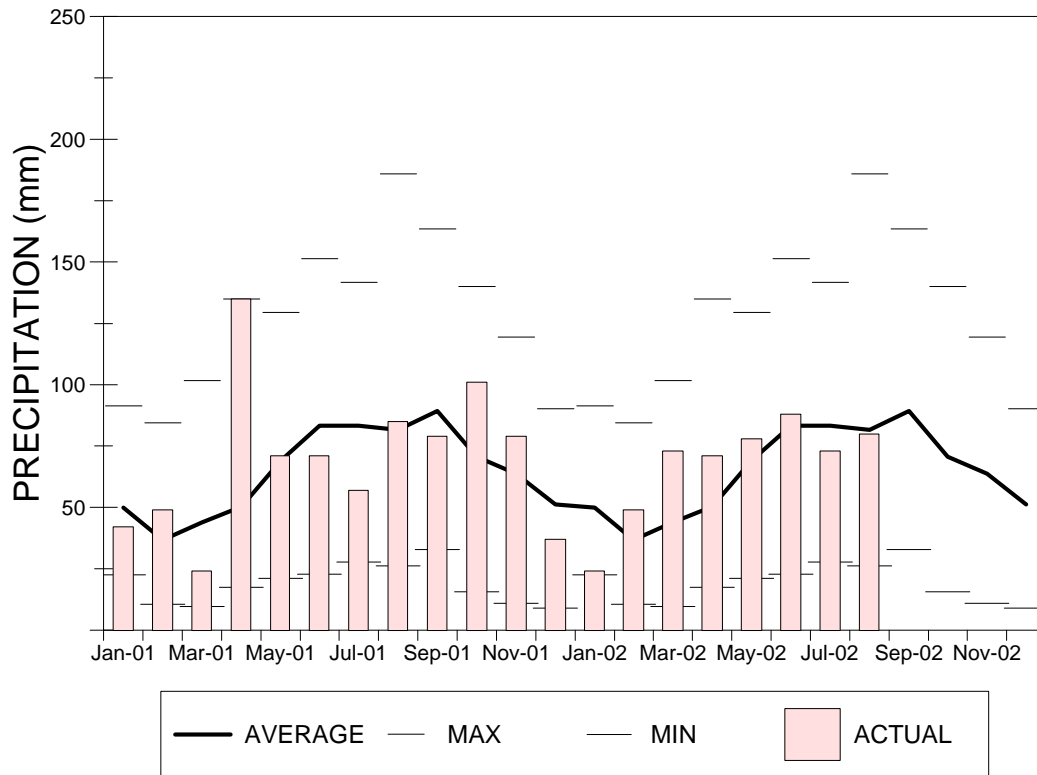
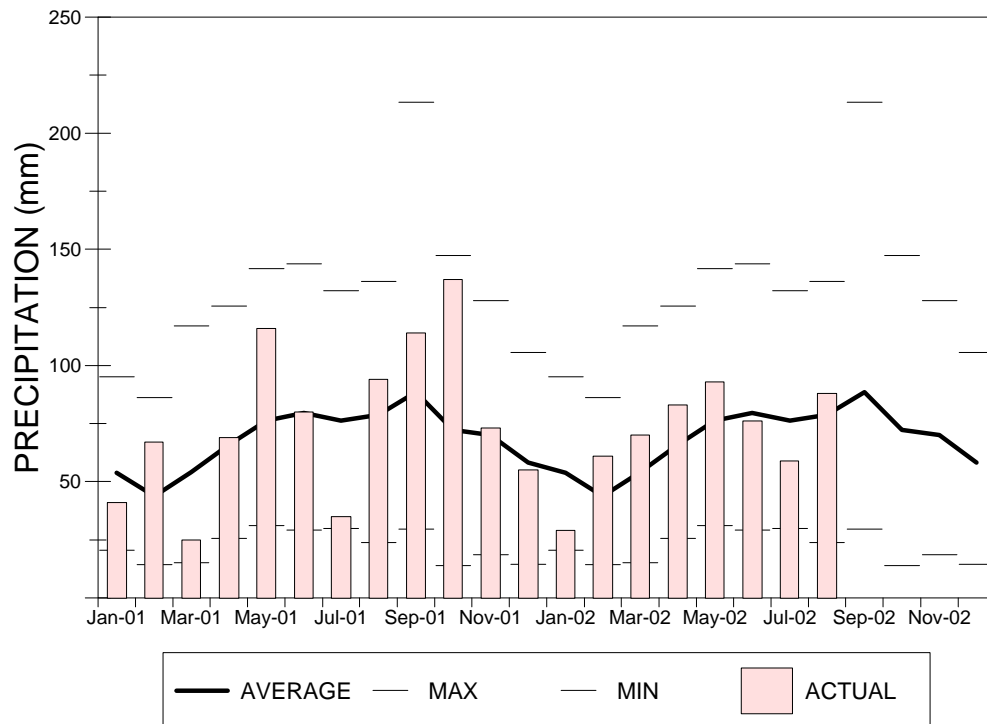


Figure 1

LAKE SUPERIOR MONTHLY PRECIPITATION



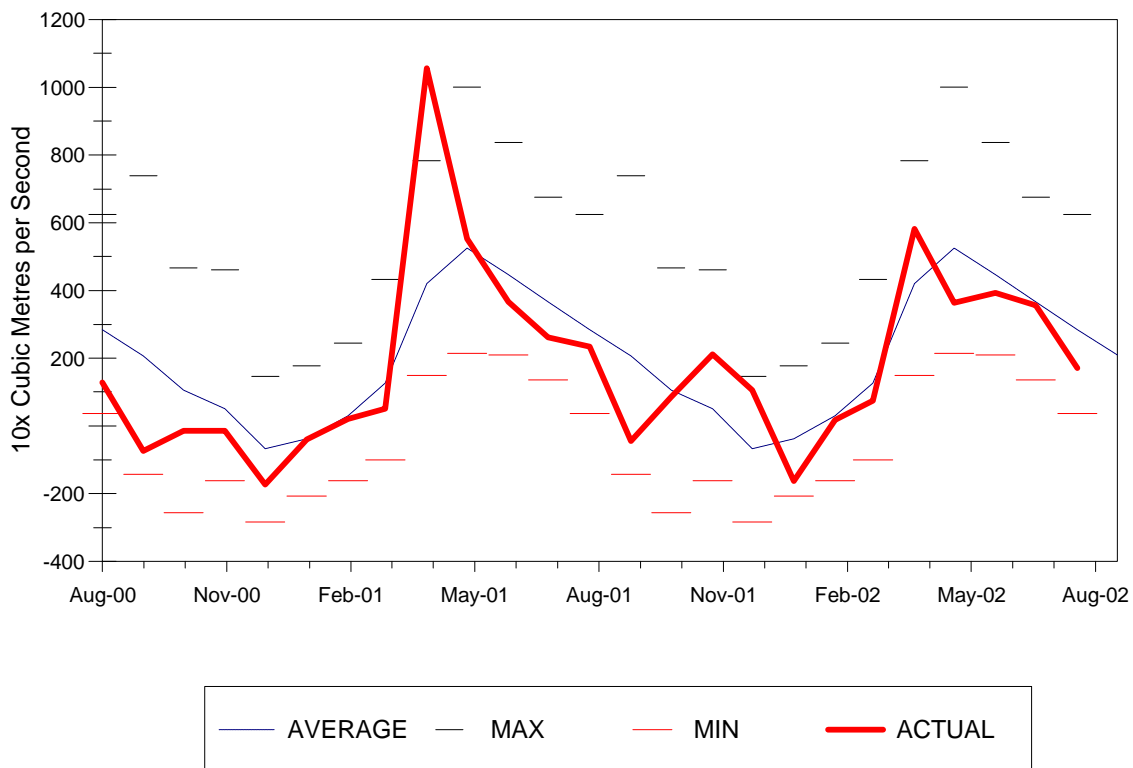
LAKES MICHIGAN-HURON PRECIPITATION



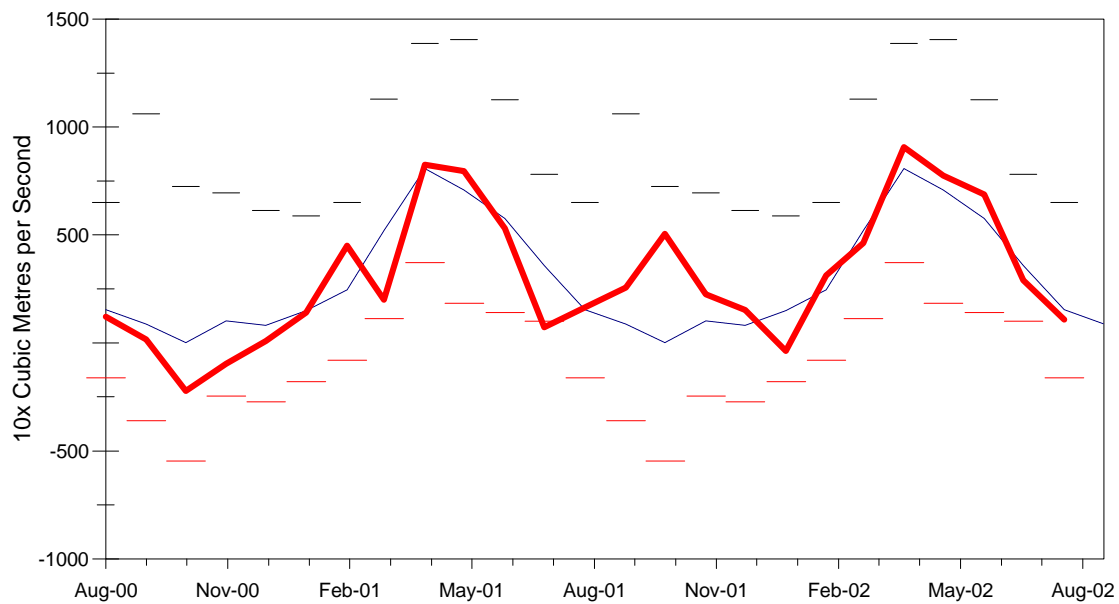
Average, maximum and minimum values based on period of record 1900-2001.

Figure 2

LAKE SUPERIOR MONTHLY NET BASIN SUPPLIES



LAKES MICHIGAN-HURON MONTHLY NET BASIN SUPPLIES



Average, maximum and minimum values based on coordinated period of record 1900-1989.

Figure 3

TABLE 1. 2001-2002 Lake Superior Hydrologic Factors

Month	Levels				Net Basin Supplies			Outflows		
	Monthly Mean Recorded ¹		Difference From Average ²		Monthly Mean Recorded		Exceedence Probability ³	Monthly Mean Recorded		Percent of Average ⁴
	metres	feet	metres	feet	m3/s	tcfs	(%)	m3/s	tcfs	
Apr-01	183.01	600.43	-0.27	-0.89	10560	373	<1*	1530	54	78
May-01	183.24	601.18	-0.14	-0.46	5530	195	43	1980	70	93
Jun-01	183.33	601.48	-0.14	-0.46	3670	130	68	2110	75	96
Jul-01	183.36	601.57	-0.17	-0.56	2630	93	81	2280	81	100
Aug-01	183.39	601.67	-0.17	-0.56	2350	83	64	2240	79	94
Sep-01	183.37	601.61	-0.19	-0.62	-440	-16	96	2230	79	94
Oct-01	183.30	601.38	-0.23	-0.75	870	31	55	1960	69	85
Nov-01	183.29	601.35	-0.20	-0.66	2130	75	11	1740	61	77
Dec-01	183.30	601.38	-0.12	-0.39	1060	37	1	1950	69	94
Jan-02	183.22	601.12	-0.13	-0.43	-1620	-57	97	2020	71	104
Feb-02	183.14	600.85	-0.15	-0.49	190	7	52	1900	67	100
Mar-02	183.11	600.75	-0.14	-0.46	750	26	64	1810	64	96
Apr-02	183.14	600.85	-0.14	-0.46	5820	206	14	1830	65	94
May-02	183.26	601.25	-0.12	-0.39	3650	129	82	2040	72	96
Jun-02	183.31	601.41	-0.16	-0.52	3930	139	61	2150	76	98
Jul-02	183.36	601.57	-0.17	-0.56	3570	126	50	2230	79	97
Aug-02	183.40	601.71	-0.16	-0.52	1720	61	82	2230	79	94

Notes: m3/s = cubic metres per second tcfs = 1000 cubic feet per second

1 Water Levels are a mean of five gauges on Lake Superior, IGLD 1985

2 Average levels are for period 1918-2001, based on a mean of five gauges. Differences computed as metres and then converted to feet.

3 Exceedence probabilities are based on the period 1900-1989.

4 Average flows are for the period 1900-1989.

* New record net basin supply for any month.

TABLE 2. 2001-2002 Lakes Michigan-Huron Hydrologic Factors

Month	Levels				Net Basin Supplies			Outflows		
	Monthly Mean Recorded ¹		Difference From Average ²		Monthly Mean Recorded		Exceedence Probability ³	Monthly Mean Recorded		Percent of Average ⁴
	metres	feet	metres	feet	m3/s	tcfs	(%)	m3/s	tcfs	
Apr-01	175.85	576.94	-0.58	-1.90	8260	292	45	4340	153	84
May-01	175.95	577.26	-0.58	-1.90	7970	281	32	4500	159	84
Jun-01	176.06	577.62	-0.53	-1.74	5300	187	58	4640	164	85
Jul-01	176.05	577.59	-0.57	-1.87	750	26	99	4730	167	86
Aug-01	176.03	577.53	-0.57	-1.87	1660	59	46	4700	166	85
Sep-01	176.01	577.46	-0.54	-1.77	2570	91	18	4710	166	86
Oct-01	176.03	577.53	-0.46	-1.51	5060	179	2	4700	166	86
Nov-01	176.05	577.59	-0.38	-1.25	2260	80	25	4800	170	89
Dec-01	176.05	577.59	-0.33	-1.08	1530	54	34	4730	167	91
Jan-02	175.99	577.40	-0.36	-1.18	-370	-13	92	4690	166	105
Feb-02	175.95	577.26	-0.38	-1.25	3140	111	30	4500	159	103
Mar-02	175.99	577.40	-0.36	-1.18	4630	164	58	4560	161	95
Apr-02	176.06	577.62	-0.37	-1.21	9090	321	32	4580	162	89
May-02	176.19	578.05	-0.34	-1.12	7760	274	35	4800	170	90
Jun-02	176.29	578.38	-0.30	-0.98	6880	243	25	4920	174	90
Jul-02	176.33	578.51	-0.29	-0.95	2910	103	65	5050	178	91
Aug-02	176.32	578.48	-0.28	-0.92	1100	39	59	5040	178	91

Notes: m3/s = cubic metres per second tcfs = 1000 cubic feet per second

1 Water Levels are a mean of six gauges on Lakes Michigan-Huron, IGLD 1985

2 Average levels are for period 1918-2001, based on a mean of six gauges. Differences computed as metres and then converted to feet.

3 Exceedence probabilities are based on the period 1900-1989.

4 Average flows are for the period 1900-1989.

TABLE 3

INTERNATIONAL LAKE SUPERIOR BOARD OF CONTROL

MONTHLY DISTRIBUTION OF LAKE SUPERIOR OUTFLOW

OUTFLOW IN m ³ /s THROUGH														
POWER CANALS					NAVIGATION CANALS			DOMESTIC USAGE				FISHERY	TOTAL	
YEAR	US	EDISON	US	GREAT	TOTAL	UNITED	CANADA	TOTAL	S.STE	ALGOMA	ST MARYS	TOTAL	STE.	LAKE
AND	GOVT	SAULT	TOTAL	LAKES	POWER	STATES		NAV.	MARIE	STEEL	PAPER	DOM.	MARY'S	SUPERIOR
MONTH	HYDRO	EL. CO		POWER	CANALS			CANALS	US+CAN			USAGE	RAPIDS	OUTFLOW
														m ³ /s
2001														
JAN	368	399	767	730	1497	3.3	0.0	3	0.3	3.4	0.3	4	93	1597
FEB	336	416	752	718	1470	2.1	0.0	2	0.3	3.1	0.3	4	93	1569
MAR	335	401	736	700	1436	3.3	0.3	4	0.3	3.3	0.3	4	92	1536
APR	396	420	816	606	1422	11.3	2.0	13	0.4	3.4	0.3	4	94	1533
MAY	403	482	885	978	1863	12.9	0.7	14	0.3	3.3	0.3	4	97	1978
JUN	386	654	1040	954	1994	14.0	2.1	16	0.4	3.3	0.3	4	98	2112
JUL	401	660	1061	1044	2105	14.8	2.6	17	0.4	3.4	0.3	4	155	2281
AUG	408	641	1049	1061	2110	14.9	2.5	17	0.4	3.5	0.3	4	104	2235
SEP	406	637	1043	1062	2105	14.0	1.8	16	0.3	3.2	0.3	4	103	2228
OCT	410	476	886	952	1838	13.0	0.6	14	0.3	3.3	0.3	4	103	1959
NOV	407	368	775	843	1618	11.0	0.0	11	0.3	3.3	0.3	4	103	1736
DEC	407	511	918	914	1832	9.8	0.0	10	0.3	3.0	0.3	4	103	1949
2002														
JAN	408	549	957	951	1908	4.0	0.0	4	0.3	3.2	0.3	4	102	2018
FEB	408	485	893	897	1790	2.1	0.0	2	0.3	3.3	0.3	4	102	1898
MAR	405	450	855	854	1709	4.1	0.0	4	0.3	3.3	0.3	4	92	1809
APR	406	457	863	860	1723	10.3	0.0	10	0.3	3.4	0.3	4	95	1832
MAY	407	558	965	958	1923	12.5	0.7	13	0.4	3.5	0.3	4	102	2042
JUN	352	665	1017	1005	2022	15.0	2.0	17	0.4	3.4	0.3	4	103	2146
JUL	306	759	1065	1041	2106	15.8	2.6	18	0.4	3.5	0.3	4	104	2232
* AUG	252	756	1008	1071	2079	16.0	2.5	18	0.4	3.6	0.3	4	129	2230

* Preliminary

NOTE: POWER CANALS COLUMNS INCLUDE FLOWS THROUGH POWER PLANTS AND SPILLWAYS

TABLE 4

INTERNATIONAL LAKE SUPERIOR BOARD OF CONTROL

MONTHLY DISTRIBUTION OF LAKE SUPERIOR OUTFLOW

OUTFLOW IN CFS THROUGH														
POWER CANALS				NAVIGATION CANALS				DOMESTIC USAGE				LAKE		
YEAR	US	EDISON	US	GREAT	TOTAL	US	CANADA	TOTAL	S.STE	ALGOMA	ST MARYS	TOTAL	STE.	SUPERIOR
AND	GOVT	SAULT	TOTAL	LAKES	POWER	STATES		NAV.	MARIE	STEEL	PAPER	DOM.	MARY'S	OUTFLOW
MONTH	HYDRO	EL. CO		POWER	CANALS			CANALS	US+CAN			USAGE	RAPIDS	CFS
2001														
JAN	13000	14100	27100	25800	52900	117	0	117	11	120	11	142	3280	56400
FEB	11900	14700	26600	25400	52000	74	0	74	11	109	11	131	3280	55500
MAR	11800	14200	26000	24700	50700	117	11	128	11	117	11	139	3250	54200
APR	14000	14800	28800	21400	50200	399	71	470	14	120	11	145	3320	54100
MAY	14200	17000	31200	34500	65700	456	25	481	11	117	11	139	3430	69800
JUN	13600	23100	36700	33700	70400	494	74	568	14	117	11	142	3460	74600
JUL	14200	23300	37500	36900	74400	523	92	615	14	120	11	145	5470	80600
AUG	14400	22600	37000	37500	74500	526	88	614	14	124	11	149	3670	78900
SEP	14300	22500	36800	37500	74300	494	64	558	11	113	11	135	3640	78600
OCT	14500	16800	31300	33600	64900	459	21	480	11	117	11	139	3640	69200
NOV	14400	13000	27400	29800	57200	388	0	388	11	117	11	139	3640	61400
DEC	14400	18000	32400	32300	64700	346	0	346	11	106	11	128	3640	68800
2002														
JAN	14400	19400	33800	33600	67400	141	0	141	11	113	11	135	3600	71300
FEB	14400	17100	31500	31700	63200	74	0	74	11	117	11	139	3600	67000
MAR	14300	15900	30200	30200	60400	145	0	145	11	117	11	139	3250	63900
APR	14300	16100	30400	30400	60800	364	0	364	11	120	11	142	3350	64700
MAY	14400	19700	34100	33800	67900	441	25	466	14	124	11	149	3600	72100
JUN	12400	23500	35900	35500	71400	530	71	601	14	120	11	145	3640	75800
JUL	10800	26800	37600	36800	74400	558	92	650	14	124	11	149	3670	78900
* AUG	8900	26700	35600	37800	73400	565	88	653	14	127	11	152	4560	78800

* Preliminary

NOTE: POWER CANALS COLUMNS INCLUDE FLOWS THROUGH POWER PLANTS AND SPILLWAYS

NOTE: Flows for individual users were originally coordinated in m³/s, and are converted here to U.S. customary units (cfs) and rounded to 3 significant figures. Total flow for each category and total Lake Superior flow in this table are computed from the individual flows rounded to 3 significant figures in cfs.